WE CLAIM:

1. A method of mooring mobile offshore drilling units including the steps of:

providing a first mooring assembly including a plurality of mooring legs each having a mooring line;

installing the first mooring assembly at a first drilling venue;

subsequently locating a mobile offshore drilling unit at the first drilling venue;

mooring the mobile offshore drilling unit at the first drilling venue by securing the mooring lines of the first mooring assembly to the mobile offshore drilling unit;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the first drilling venue;

pre-installing a predetermined number of mooring legs at a second drilling venue;

relocating the mobile offshore drilling unit from the first drilling venue to the second drilling venue;

mooring the mobile offshore drilling unit at the second drilling venue by connecting mooring legs pre-installed at the second drilling venue to the mobile offshore drilling unit;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the second

drilling venue;

pre-installing a predetermined number of mooring legs at a third drilling venue;

relocating the mobile offshore drilling unit from the second drilling venue to the third drilling venue;

mooring the offshore drilling unit at the third drilling venue by connecting mooring legs pre-installed at the third drilling venue to the mobile offshore drilling unit; and

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the third drilling venue.

2. The method of mooring mobile offshore drilling units according to Claim 1 further characterized by providing each of the mooring legs with a recoverable anchor.

3. The method of mooring mobile offshore drilling units according to Claim 2 further characterized by providing each of the mooring legs with a recoverable anchor having a riser line secured to and extending from the anchor, and further characterized by providing each of the mooring legs with a submerged buoy secured to the upper end of the riser line, said submerged buoy being positioned substantially below the surface of the water both when the mooring leg is connected to the mobile offshore drilling unit, thereby reducing vertical loading on the mobile offshore drilling unit and increasing the stiffness of the mooring leg, and when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, said submerged buoy having a predetermined buoyancy sufficient to maintain the riser line in an essentially vertical, orientation, thereby minimizing flexure wear of a lower portion of the riser line.

4. The method of mooring mobile offshore drilling units according to Claim 2 wherein at least one of the mooring legs is provided with a recoverable anchor comprising a suction anchor.

5. The method of mooring offshore drilling units according to Claim 2 wherein at least one of the mooring legs is provided with a recoverable anchor comprising a vertically loaded anchor.

6. The method of mooring offshore drilling units according to Claim 2 wherein a riser line extends upwardly from the recoverable anchor and comprises a pluration of discreet sections of polyester rope.

7. A method of mooring mobile offshore drilling units including the steps of:

providing a first taut-leg mooring assembly including a plurality of taut-leg mooring legs each having a mooring line;

installing the first taut-leg mooring assembly at a first drilling venue;

subsequently locating a mobile offshore drilling unit at the first drilling venue;

mooring the mobile offshore drilling unit at the first drilling venue by securing the mooring lines of the first taut-leg mooring assembly to the mobile offshore drilling unit;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the first drilling venue;

providing a second taut-leg mooring assembly

comprising a plurality of taut-leg mooring legs each having a mooring line;

installing the second taut-leg mooring assembly at a second drilling venue while simultaneously conducting drilling operations from the mobile offshore drilling unit at the first drilling venue;

terminating drilling operations at the first drilling venue;

disconnecting the mooring lines of the first taut-leg mooring assembly from the mobile offshore drilling unit;

relocating the mobile offshore drilling unit from the first drilling venue to the second drilling venue;

mooring the mobile offshore drilling unit at the second drilling venue by connecting the mooring lines of the installed second taut-leg mooring assembly to the mobile offshore drilling unit;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the second drilling venue;

recovering the taut-leg mooring legs comprising the first mooring assembly from the first drilling venue;

installing the first mooring assembly at a third drilling venue while concurrently conducting drilling operations from the moored drilling assembly at the second drilling venue;

subsequently terminating drilling operations at the second drilling venue;

disconnecting the mobile offshore drilling unit from the second mooring assembly;

relocating the mobile offshore drilling unit from the second drilling venue to the third drilling venue;

mooring the offshore drilling unit at the third drilling venue by connecting the mooring lines of the installed first taut-leg mooring assembly to the mobile offshore drilling unit; and

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the third drilling venue.

8. The method of mooring mobile offshore drilling units according to Claim 7 further characterized by providing each of the taut-leg mooring legs with a recoverable anchor.

9. The method of mooring mobile offshore drilling units according to Claim 7 further characterized by providing each of the taut-leg mooring legs with a recoverable anchor having a riser line secured to and extending from the anchor, and further characterized by providing each of the taut-leg mooring legs with a submerged buoy secured to the upper end of the riser line, said submerged buoy being positioned substantially below the surface of the water both when the taut-leg mooring leg is connected to the mobile offshore drilling unit, thereby reducing vertical loading on the mobile offshore drilling unit and increasing the stiffness of the mooring leg, and when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, said submerged buoy having a predetermined buoyancy sufficient to maintain the riser line in tension and in an essentially vertical position when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, thereby minimizing flexure wear of a lower portion of the riser line.

10. The method of mooring mobile offshore drilling units according to Claim 8 wherein at least one of the taut-leg mooring legs is provided with a recoverable anchor comprising a suction anchor.

11. The method of mooring offshore drilling units according to Claim 8 wherein at least one of the taut-leg mooring legs is provided with a recoverable anchor comprising a vertically loaded anchor.

12. The method of mooring offshore drilling units according to Claim 8 further understanding a riser line extending from the recoverable anchor and comprising a plurality of discreet segments each formed from polyester rope.

13. A method of mooring mobile offshore drilling units including the steps of:

providing a taut-leg mooring assembly including a plurality of taut-leg mooring legs each having a mooring line;

installing the taut-leg mooring assembly at a first drilling venue;

subsequently locating a mobile offshore drilling unit at the first drilling venue;

mooring the mobile offshore drilling unit at the first drilling venue by securing the mooring lines of the taut-leg mooring assembly to the mobile offshore drilling unit;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the drilling venue;

terminating drilling operations at the first drilling venue;

subsequently installing some of the taut-leg mooring legs of the taut-leg mooring assembly at a second drilling venue;

disconnecting the remaining mooring lines of the first taut-leg mooring assembly from the mobile offshore drilling unit;

relocating the mobile offshore drilling unit from the first drilling venue to the second drilling venue;

mooring the mobile offshore drilling unit at the second drilling venue by connecting the mooring lines of the installed taut-leg mooring legs to the mobile offshore drilling unit;

recovering the remaining taut-leg mooring legs comprising the first mooring assembly from the first drilling venue;

thereafter installing the remaining taut-leg mooring legs at the second drilling venue;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the second drilling venue;

subsequently terminating drilling operations at the second drilling venue;

thereafter installing some of the taut-leg mooring legs of the first mooring assembly at a third drilling venue;

disconnecting the mobile offshore drilling unit from the remaining taut-leg mooring legs of the mooring assembly;

relocating the mobile offshore drilling unit from the second drilling venue to the third drilling venue;

mooring the offshore drilling unit at the third drilling venue by connecting pre-installed taut-leg mooring legs of the taut-leg mooring assembly to the mobile offshore drilling unit;

thereafter installing the remaining taut-leg mooring leg of the taut-leg mooring assembly at the third drilling venue; and

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the third drilling venue.

14. The method of mooring mobile offshore drilling units according to Claim 13 further characterized by providing each of the taut-leg mooring legs with a recoverable anchor.

15. The method of mooring mobile offshore drilling units according to Claim 13 further characterized by providing each of the taut-leg mooring legs with a recoverable anchor having a riser line secured to and extending from the anchor, and further characterized by providing each of the taut-leg mooring legs with a submerged buoy secured to the upper end of the riser line, said submerged buoy being positioned substantially below the surface of the water both when the taut-leg mooring leg is connected to the mobile offshore drilling unit, thereby reducing vertical loading on the mobile offshore drilling unit and increasing the stiffness of the mooring leg, and when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, said submerged buoy having a predetermined buoyancy sufficient to maintain the riser line in tension and in an essentially vertical position

when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, thereby minimizing flexure wear of a lower portion of the riser line.

16. The method of mooring mobile offshore drilling units according to Claim 13 wherein at least one of the taut-leg mooring legs is provided with a recoverable anchor comprising a suction anchor.

17. The method of mooring offshore drilling units according to Claim 13 wherein at least one of the taut-leg mooring legs is provided with a recoverable anchor comprising a vertically loaded anchor.

18. The method of mooring offshore drilling units according to Claim 13 further comprising providing a recoverable anchor and a user line extending therefrom which includes a plurality of discreet lengths of polyester rope.

19. A method of mooring mobile offshore drilling units including the steps of:

providing a first taut-leg mooring assembly including a pre-determined number of taut-leg mooring legs each having a mooring line;

installing the first taut-leg mooring assembly at a first drilling venue;

subsequently locating a mobile offshore drilling unit at the first drilling venue;

mooring the mobile offshore drilling unit at the first drilling venue by securing the mooring lines of the first taut-leg mooring assembly to the mobile offshore drilling unit;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the first drilling venue;

providing a second taut-leg mooring assembly comprising a second pre-determined number of taut-leg mooring legs each having a mooring line;

installing the second taut-leg mooring assembly at a second drilling venue while simultaneously conducting drilling operations from the mobile offshore drilling unit at the first drilling venue;

terminating drilling operations at the first drilling venue;

disconnecting the mooring lines of the first

taut-leg mooring assembly from the mobile offshore drilling unit;

relocating the mobile offshore drilling unit from the first drilling venue to the second drilling venue;

mooring the mobile offshore drilling unit at the second drilling venue by connecting the mooring lines of the installed second taut-leg mooring assembly to the mobile offshore drilling unit;

subsequently installing some of the taut-leg mooring legs from the first taut-leg mooring assembly at the second drilling venue;

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the second drilling venue;

recovering the remaining taut-leg mooring legs comprising the first mooring assembly from the first drilling venue;

installing the remaining taut-leg mooring legs of the first mooring assembly at a third drilling venue while concurrently conducting drilling operations from the moored drilling assembly at the second drilling venue;

subsequently terminating drilling operations at the second drilling venue;

disconnecting the mobile offshore drilling unit from the second mooring assembly;

relocating the mobile offshore drilling unit from

the second drilling venue to the third drilling venue;

mooring the offshore drilling unit at the third drilling venue by connecting the mooring lines of the installed first taut-leg mooring assembly to the mobile offshore drilling unit;

subsequently removing some of the taut-leg mooring legs from the second drilling venue and installing them at the third drilling venue; and

subsequently conducting drilling operations from the moored mobile offshore drilling unit at the third drilling venue.

20. The method of mooring mobile offshore drilling units according to Claim 19 further characterized by providing each of the taut-leg mooring legs with a recoverable anchor.

21. The method of mooring mobile offshore drilling units according to Claim 19 further characterized by providing each of the taut-leg mooring legs with a recoverable anchor having a riser line secured to and extending from the anchor, and further characterized by providing each of the taut-leg mooring legs with a submerged buoy secured to the upper end of the riser line, said submerged buoy being positioned substantially below the surface of the water both when the taut-leg mooring leg is connected to the mobile offshore drilling unit, thereby reducing vertical loading on the mobile offshore drilling

unit and increasing the stiffness of the mooring leg, and when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, said submerged buoy having a predetermined buoyancy sufficient to maintain the riser line in tension and in an essentially vertical position when the taut-leg mooring leg is not connected to the mobile offshore drilling unit, thereby minimizing flexure wear of a lower portion of the riser line.

22. The method of mooring mobile offshore drilling units according to Claim 19 wherein at least one of the taut-leg mooring legs is provided with a recoverable anchor comprising a suction anchor.

23. The method of mooring offshore drilling units according to Claim 19 wherein at least one of the taut-leg mooring legs is provided with a recoverable anchor comprising a vertically loaded anchor.

24. The method of mooring offshore drilling units according to Claim 19 wherein each taut-leg mooring leg includes a recoverable anchor and a riser line extending from the anchor and including a plurality of discreet segments of polyester rope.

25. A recoverable anchor system comprising:

an elongate, hollow tube having an open bottom and a substantially closed top;

a pumping port mounted at the top of the cylinder for selectively allowing the flow of water into and out of the cylinder;

a remotely operable vehicle;

pump means mounted on the remotely operable vehicle for selective operation to pump water into or out of the cylinder through the port at the upper end thereof thereby causing a pressure differential between the inside and the outside of the cylinder which causes the cylinder to move into and out of engagement with the sea floor; and

control means located at the sea surface for selectively causing the pump on the remotely operated vehicle to pump water into or out of the cylinder.

26. The recoverable anchor system according to Claim 25 further including a water flow port mounted on the cylinder for permitting water flow between the inside and the outside of the cylinder as the cylinder is moved between the sea surface and the sea floor, and means mounted on the remotely operable vehicle for closing the water flow port during pumping operations.

27. The recoverable anchor system according to Claim 26 further including level indicating means mounted on the top of the cylinder for indicating the orientation of the cylinder relative to vertical and means mounted on the remotely operated vehicle for determining the orientation of the cylinder responsive to the level indicating means.

28. The recoverable anchor system according to Claim 26 further including means on the side of the cylinder for indicating the positioning of the top of the cylinder relative to the top of the sea floor, and means mounted on the remotely operable vehicle for reading the indicia on the side of the cylinder and thereby determining the positioning of the cylinder relative to the sea floor.

29. The recoverable anchor system according to Claim 25 further including an anchoring pad eye secured to the outside of the cylinder at a point substantially displaced from the top of the cylinder toward the bottom thereof.

30. For use in a riser line extending from the sea floor to the sea surface, a variable buoyancy buoy comprising:

a frame having first and second ends;

a first buoyancy member mounted on the frame;

a second buoyancy member selectively mountable on the frame to change the buoyancy of the buoy;

means for securing the second buoyancy member on the frame; and

means located at the first and second ends of the frame for securing the buoy in the riser line.

31. The variable buoyancy buoy according to Claim 30 further characterized by a plurality of second buoyancy members each selectively mountable on the frame to change the buoyancy of the buoy, and means for securing the second buoyancy members in engagement with the frame.

32. The variable buoyancy buoy according to Claim 31 wherein the first buoyancy member and the second buoyancy members are formed from syntactic foam.

33. The variable buoyancy buoy according to Claim 32 wherein the frame includes a shaft extending through the first buoyancy member, a fixed plate comprising one end of the frame and secured to the shaft in engagement with the first buoyancy member, and a second plate comprising the opposite end of the frame and selectively engageable with the shaft for securing the variable buoyancy members in engagement therewith.

34. The variable buoyancy buoy according to Claim 33 wherein the retaining means comprises a fastener extending through the second plate and the shaft for securing the second plate and the variable buoyancy members in engagement with the shaft.